Testimony of

Mr. Chris Farrand

Vice President Corporate Affairs, Peabody Group

House Subcommittee on National Economic Growth,
Natural Resources and Regulatory Affairs

Economic Impacts of the Kyoto Protocol -
Effects on the Coal and Electric Utility Sectors

June 24, 1998

Mr. Chairman, Members of the Subcommittee.

My name is Chris Farrand; I am Vice President for Corporate Affairs of Peabody Group. In behalf of my company, I want to thank you for the opportunity to present to the Subcommittee our concerns about the economic impacts of the Kyoto Protocol on Climate Change.

Peabody is the world's largest private coal producer and largest fuel supplier to the U.S. electric utility industry. Our products fuel more than nine (9) percent of all U.S. electricity generation. Our subsidiary, Citizens Power, is one of the top ten power marketers in the United States. Not surprisingly, we have focused our attention on the effects of the Kyoto Protocol on coal and electricity markets. Peabody engaged Resource Data International, Inc. (RDI) to examine the impacts the Kyoto Protocol would have on the U.S. electricity supply and the domestic economy.

The results of the RDI study and our thesis here today is that the U.S. electric utility industry will not be able meet projected power demand if the Kyoto Protocol to the Framework Convention on Climate Change is implemented. Because economic growth is closely tied to the availability of electricity, the shortfall in electricity will have a major negative impact on U.S. economic growth. Moreover, the projected shortfall in power supply and economic growth will be felt disproportionately in the interior region of the country.

Before I summarize the findings of the RDI study, I want to state for the record that Peabody strongly opposes the Kyoto Protocol. First, we are not convinced by the scientific evidence to date that the potential for adverse climate change is imminent. Further, we are not convinced that the actions called for in the Kyoto Protocol will have any real impact on the global climate. We are convinced that if the Kyoto Protocol enters into force, this nation's economy will suffer significant harm with little or no environmental benefit. The essence of the Kyoto Protocol can be captured in a trite but apt phrase – "All Pain and No Gain".

The RDI Study

Let me now try to summarize for the Subcommittee the findings of the RDI study, which is entitled: *The Kyoto Protocol – Putting US Electricity Supply and GDP at Risk*. RDI is one of the preeminent analytical firms that specializes in energy markets – particularly the coal, electricity and gas markets. In this study, RDI has derived its analysis primarily from the energy and economic projections contained in the Energy Information Administration's *Annual Energy Outlook 1998*.

Assumptions about Emissions Trading

At the outset we should state that RDI's analysis assumes unrestricted CO2 emissions trading on a domestic basis but does not assume any international trading.

There are provisions in the Kyoto Protocol to allow emissions trading among developed countries – the so-called Annex I countries that are affected by the emission reduction commitments. There are also provisions in the treaty to establish a Clean Development Mechanism under which Annex I countries may receive credit for emission reductions in developing countries, or non-Annex I countries. Just as there are no monitoring or enforcement provisions in the treaty, there is no language in the treaty to define how these international emissions trading mechanisms will work. The most recent attempt to define them was not successful.

At the U. N. climate change negotiating session that concluded two weeks ago in Bonn, no progress was made in defining trading mechanisms, and we have no way of judging whether such mechanisms, if finally given definition, will be effective. The prospects for an effective international trading mechanism appear dim. Among Annex I countries, only Russia, the Ukraine and perhaps some eastern European countries are projected to have any surplus emission allowances available in the 2008-20 12 timeframe. Moreover, the European Union, developing countries, and most treaty advocates want to restrict the ability of the United States and other Annex I countries to meet their reduction targets through the purchase of emission reductions in other countries. Those who would restrict trading seem more interested in punishing the advanced economies like the United States than they are in solving a perceived climate problem.

In fact, there is a fundamental deadlock concerning the treaty itself. At the Bonn negotiating session, developing countries remained adamantly opposed to discussing even voluntary emission reduction contributions. On the other hand, the Administration has publicly maintained that "meaningful" contributions to greenhouse gas emission reductions from developing countries are necessary before the United States can implement the treaty. Under these deadlocked circumstances, we are hard pressed to see how the President can reverse himself and sign the treaty or how the Senate can ratify it.

Suffice to say RDI found it impossible to calculate the potential benefits of an international emission-trading program so lacking in both definition and prospect. With that caveat, let me outline the findings of the RDI study.

Results of the RDI Study

The primary conclusions of the RDI study are:

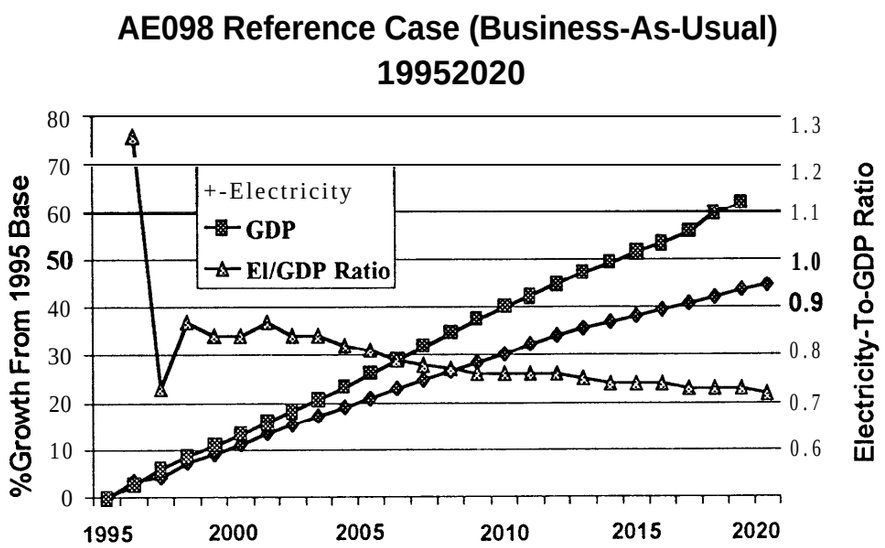
1. Electricity rates will increase significantly.

The electricity sector will need to spend $68.7 billion to replace high carbon emitting generation sources in 20 10 alone in order to comply with a 7 percent reduction from 1990 carbon emission levels. This is in addition to the $46.5 billion that the federal government would collect if it chooses to sell carbon emission permits to the electricity sector at a price of $100 per ton. These cumulative one-year costs of $115 billion in 20 10 are more than half of the entire revenues of the electricity industry last year – about $2 15 billion.

2. The prescribed carbon controls would put the U.S. economy at risk.

Growth in the U.S. economy has historically been closely linked to the growth in electricity supply. The ratio of 1995 to 1996 electricity growth-to-GDP growth was 1.30 percent. Every 1.3 percent growth in the electricity supply produced a 1.0 percent growth in GDP. Meeting the carbon emission reduction requirements of the Kyoto Protocol will limit the annual growth in electricity supply between 1995 and 2020 to 0.84 percent, far less than the 1.42 percent forecast under Department of Energy's projected business-as-usual scenario. Neither natural gas nor carbon-neutral generating sources will be able to offset the electricity shortfall.

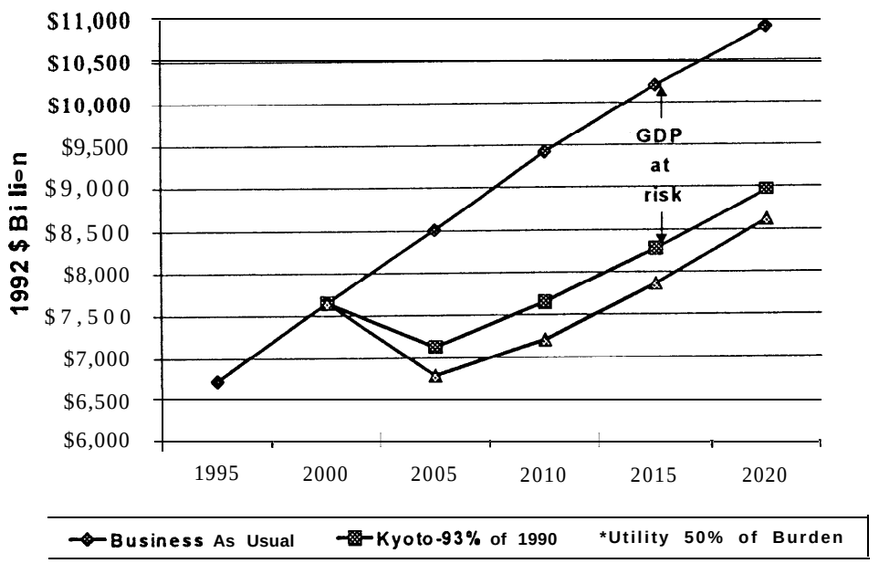
AEO98 Electricity vs. GDP Growth, 19952020



Source: Resource Data International, Inc, 1998

If the electricity sector is called upon to reduce its proportionate share of carbon emissions (approximately 35 percent), up to $1.8 trillion or 19 percent of GDP could be at risk in 2010 as a result the electricity shortfall. On a cumulative basis, as much as $28.2 trillion could be at risk in the years between 2005 and 2020. The results are even greater if the electricity sector is called upon to bear 50 percent of the carbon emission reduction requirements, a solution that may be politically expedient though painful for the consumer.

GDP Projections, 19952020



Source: Resource Data International, Inc, 1998

3. Proposed CO2 emissions trading proposals are not a panacea.

The sulfur dioxide emissions trading program under the Clean Air Act Amendments of 1990 has been cited as the model for a carbon trading program under a climate change treaty. Power plants would

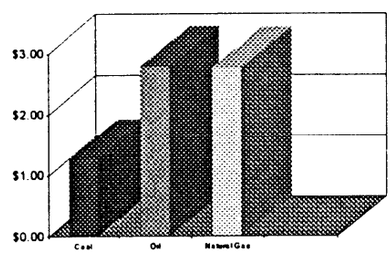
need to combust a lower carbon fuel - most likely switching from coal to natural gas. If, as a result of switching, emissions fell below the allowable level, the excess reduction could be traded to offset emissions from another source, which presumably has a higher cost of control.

The success of the SC2 trading program lies in the ability of the power plants to switch from high sulfur coal to low sulfur coal. Because low sulfur coal is now generally less expensive than high sulfur coal, overcompliance with the acid rain program produced a surplus of emission allowances which could be traded. There are no "low carbon" sources of coal, and natural gas is a higher cost fuel alternative. In 1997, the average megawatt-hour cost of generating electricity from natural gas ($35.12/MWh) was more than twice the average cost of coal-fired electricity ($17.24/MWh).

Cost of Electricity Generation

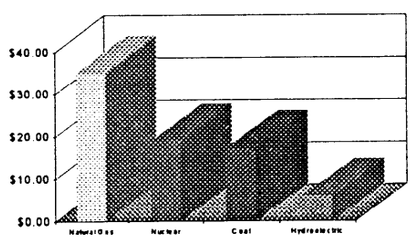
- Average 1997 fuel prices delivered to US generating plants (cost/MM Btu):

Heavy Oil	$2.79
Natural Gas	$2.77
Coal	$ 1.27



- 1997 average total generating costs (per MWh):

Natural Gas	$35.12
Nuclear	$18.98
Coal	$17.24
Hydro	$ 5.86

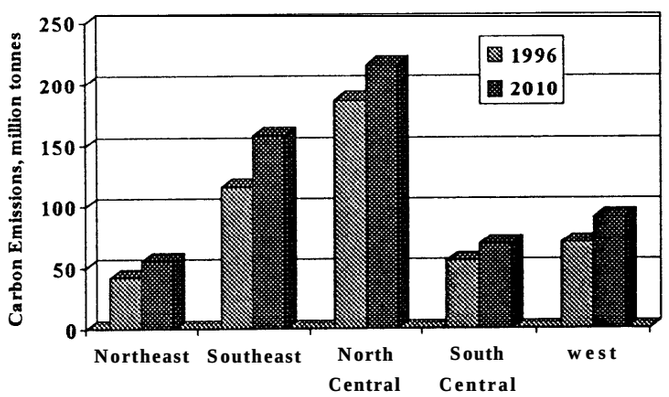


Based on monthly operating data
Source: Resource Data International, 1998, modeled costs

4. Carbon emission reductions will disproportionately impact the U.S. interior states.

The Northeastern and Western states have greater access to hydroelectric, nuclear, natural gas and renewable energy resources than the interior regions. As a result, these states generate electricity at a less carbon-intensive ratio but at a higher cost. The interior states relied upon coal-based generation for 72 percent of their electricity in 1995 while the other states in coastal regions relied upon coal for only 35 percent of generation. That relationship is projected to be maintained through 20 10.

Regional Carbon Emissions



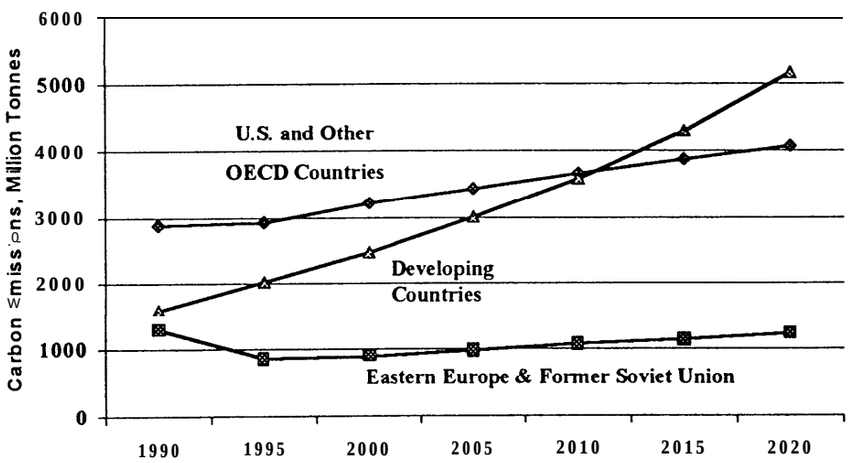
The economies of the interior states are more electricity-intensive than the economies of the states in the coastal regions, using about 0.5 1 tWh (TerraWatthour) per $1 billion of Gross State Product,

compared to 0.38 tWh for the coastal states. Reductions in coal-based generation to meet carbon limitations will therefore have a disproportionate effect on the interior states.

5. U.S. efforts to reduce carbon will have diminishing returns.

Of the world's manmade carbon emissions, the United States emitted 24 percent in 1995 but is projected to emit only 19 percent by 2020 under the EIA's business-as-usual scenario. Before 2015, carbon emissions from developing countries will exceed those of the OECD countries. The projected difference between carbon emissions from developing countries and OECD countries will rapidly increase and exceed one billion metric tons ("tonne") per year by 2020. Even if the

Developing Country Emissions



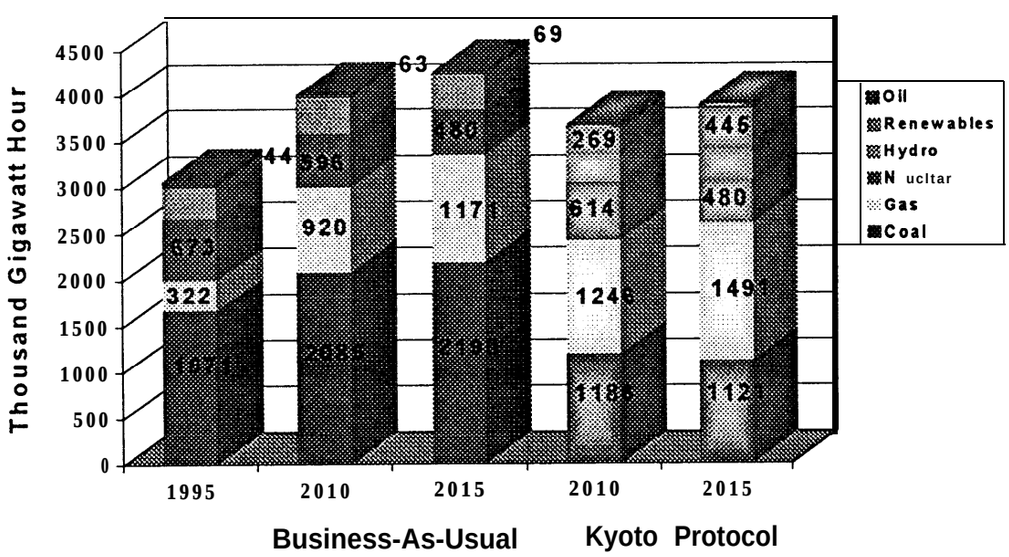
Source, Energy Information Administration, IEO98, April, 1998

Annex I countries meet their Kyoto emission reduction commitments, emissions from non-Annex I countries will more than offset these reductions. During the first 5-year commitment period, 2008 to 2012, the cumulative carbon emission reductions of 4,025 million tonnes from OECD countries will be offset by increases from 1990 levels of 9,772 million tonnes from developing countries.

6. Summary of RDI study.

The RDI study concludes that the emission limitations of the Kyoto Protocol would result in a reduction in projected coal-fired generation of nearly 44 percent by 2010 and 50 percent by 2015.

U.S. Generation under the Kyoto Protocol



Source "The Kyoto Protocol, Putting US Electricity Supply and GDP at Risk," Resource Data International, February 1998.

The RDI study analyzed all available alternative sources of generation, including natural gas, nuclear, hydropower, wind, solar, geothermal and biomass. Because coal's share of generation is so large – 57 percent in 1997 – and because the required reductions in coal-based generation would be so great, no other source or combination of sources will be available to make up the shortfall. Growth in electricity supply is necessary for continued economic growth, and, even with DOE's projected improvement in the electricity-to-GDP ratio, the electricity shortfall resulting from the Kyoto Protocol will have a very detrimental effect on the U.S. economy.

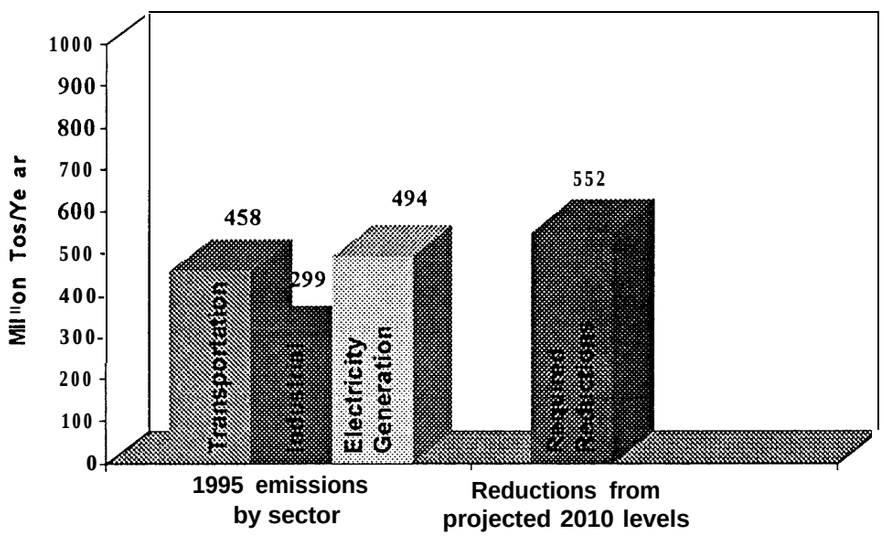
Magnitude of Emission Reductions

While we have focused on the impacts of the Kyoto Protocol on the electricity sector and the resulting effects on the economy as a whole, it is useful to put in context the total carbon emission requirements to be imposed upon the United States.

To meet the target emission level of 93 percent of 1990 emissions, the United States will have to reduce carbon emissions from the projected 20 10 level by 552 million annual tonnes. This emission reduction is more than the entire electricity sector emitted in 1995 (494 million tonnes), and it is nearly twice as much as the entire industrial sector emitted in that year (299 million tonnes). To put it another way, if every car, truck, boat, train, and airplane were removed from our travel-ways, the resulting emission reduction (458 million tonnes) would not be sufficient to meet the demands of the Kyoto Protocol. If one third of all the 1995 emissions from all these sectors combined were eliminated (4 17 million tonnes), the emission reduction obligation of the United States still could not be met (552 million tonnes).

US Emission Reductions

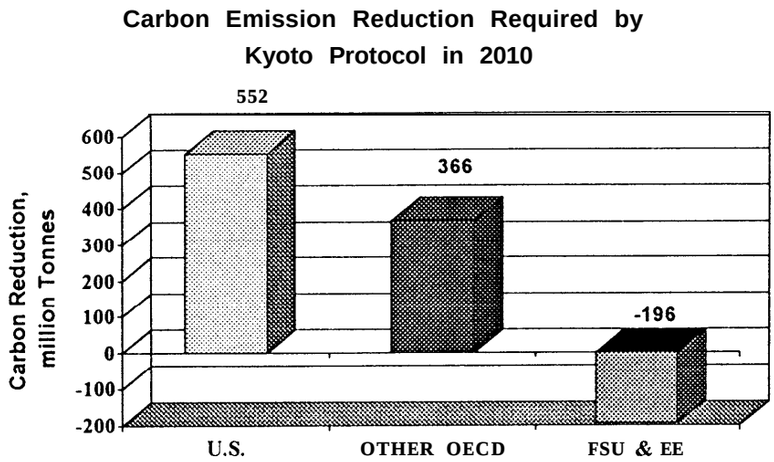
US Carbon Emissions Vs. Reduction Requirements



Energy information Administration, 1997

To put the U.S. emission reduction obligations in an international context, the **552** million annual tonnes of carbon reductions the United States will achieve in 2010 compares very unfavorably and unfairly with the 366 million tonnes of annual reductions to be achieved by the other OECD countries combined. The projected carbon emission reduction obligations of the United States are larger than all of the other affected countries put together. Clearly, these disparate reduction requirements will affect our national competitive position in the world marketplace.

Disproportionate Reductions



Source, Energy Information Administration, IEO98, April, 1998

Conclusion

From the perspective of Peabody Group as the largest coal producer and a significant participant in the electricity market, the prospect of the Kyoto Protocol's implementation is daunting. There should be no mistake about our opposition to this treaty.

But even the unbiased observer - even one who has sincere if unfounded concerns about global warming - must question how and why the U.S. negotiators in Kyoto could have agreed to a protocol that is so obviously harmful and unfair to the United States and so patently ineffective in solving the problem some scientists have suggested.

I appreciate the opportunity to present Peabody's views to the Subcommittee, and I would be happy to respond to any questions.